

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the platemaking approach of the development liquid for the alkali development of the original edition for lithography which can carry out direct platemaking by infrared laser scan and in which the so-called direct platemaking is possible, and the lithography version based on the digital signal of a computer etc.

[0002]

[Description of the Prior Art] In recent years, such laser is very useful as the exposure light source of the system which **** better **, the solid state laser which has a luminescence field especially in infrared rays from near-infrared, and semiconductor laser can come to hand [high power and a small thing] now easily, and development of laser engraves directly from this digital data.

[0003] As an image recording ingredient suitable for laser writing, the image recording ingredient of the positive type containing a binder like cresol resin, the matter which absorbs light and generates heat, and the compound which is pyrolysis nature like quinone diazide, and the solubility of said binder is reduced substantially and sells it at the condition before decomposition is proposed by JP,7-285275,A. Although the matter which absorbs said light and generates heat generates heat and this makes an exposure part alkali fusibility in an exposure part by infrared exposure (heat mode type), since endoergic will be carried out to the aluminum which is a base material, thermal efficiency was low, and the solubility over the alkali development liquid in a development process was not satisfactory. For this reason, the alkali concentration of a developer was raised and the solubility of an exposure part has been secured.

[0004] However, under the above high-concentration alkali conditions, the solubility-proof over the alkali development liquid of the image section was low, it dissolved only by a blemish being slightly shown in an image recording ingredient front face, and the original edition for lithography of a heat mode type had problems, such as producing a defect in the image section. The inclination was more remarkable in the original edition for lithography of the positive type which uses the high high molecular compound of fusibility to an alkali water solution especially. therefore -- without there is a limit in raising the alkali concentration of an alkali developer and it gives a defect to the formed image section so that a residual membrane may not arise in the non-image section -- high -- it was difficult to form a sharp and clear image. In the minute image which contains the dot section, a thin line, etc. especially, the raise in sharp and improvement in repeatability are demanded.

[0005]

[Problem(s) to be Solved by the Invention] This invention solves many problems in said former, and makes it a technical problem to attain the following purposes. namely, -- without this invention gives a defect to the image section -- high -- it aims at offering the platemaking approach of the alkali development liquid for the lithography versions which can form a sharp and clear image, and the lithography version.

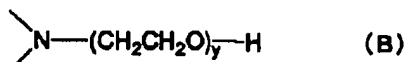
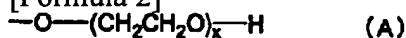
[0006]

[Means for Solving the Problem] this invention person etc. came to complete a header and this invention

for reducing the alkali fusibility of the image section and getting by containing the compound which has an ethyleneoxide radical and increasing the amount of potassium ion (K⁺) in alkali development liquid further, as a result of repeating examination wholeheartedly about the component which may improve the dissolution deterrent of the image section. Said The means for solving a technical problem is as follows. Namely, [0007] <1> It is the alkali development liquid for the lithography versions with which the ethyleneoxide addition product which has at least one radical expressed with the following type (A) or (B) is contained, and potassium ion content (mole ratio) to the alkali-metal cation in alkali development liquid and the total content of ammonium ion is characterized by being 50 - 100%.

[0008]

[Formula 2]



x and y express one or more integers among [type.]

[0009] <2> After exposing the original edition for lithography which has an image formation layer containing an infrared absorption agent in the image by infrared exposure, it is the platemaking approach of the lithography version characterized by developing negatives with the alkali development liquid for the lithography versions of a publication to the above <1>.

[0010]

[Embodiment of the Invention] As for the development liquid for the lithography versions of this invention, x and y express one or more integers to intramolecular among a -O(CH₂CH₂O) xH or -N(CH₂CH₂O) yH[type.] The ethyleneoxide addition product which comes out and has at least one radical expressed is contained, and the potassium ion content (mole ratio) to an alkali-metal cation and the total content of ammonium ion is 50 - 100%, and comes to contain the component of further others. In the platemaking approach of the lithography version of this invention, x and y express one or more integers for the original edition for lithography containing an infrared absorption agent exposed in the image by infrared exposure to intramolecular among a -O(CH₂CH₂O) xH or -N(CH₂CH₂O) yH[type.] Negatives are developed with the ethyleneoxide addition product which comes out and has at least one radical expressed, and the alkali development liquid which contains 50 - 100% (mole ratio) of potassium ion to an alkali-metal cation and the total content of ammonium ion further. Hereafter, the platemaking approach of the lithography version of this invention is explained, and the detail of the alkali development liquid for the lithography versions of this invention is also clarified through this explanation.

[0011] By the platemaking approach of this invention, as the original edition for lithography, on a base material, if infrared laser is irradiated to this original edition for lithography based on digital data and it exposes in the desired image using the original edition for lithography which has the image formation layer which contains an infrared absorption agent at least, laser light will be efficiently absorbed by said infrared absorption agent, and an image will be formed through the following process. In the case of the original edition for lithography of a positive type, only an exposure part generates heat by are recording of the absorbed energy by exposure, become fusibility at the alkaline water, and by namely, the development using the alkali development liquid of this invention mentioned later Only the exposure section is removed and a desired image is formed, and in being the original edition for lithography of a negative mold If only an exposure part generates heat by are recording of the absorbed energy by exposure and an acid is generated While only a lifting and the exposure section become the alkaline water with insolubility about crosslinking reaction and the cross linking agent which lives together with this acid forms an image, in a non-exposed area, it is removed by the development using the alkali development liquid of this invention mentioned later, and a desired image is formed.

[0012] Hereafter, the alkali development liquid of this invention used for said development is explained. The alkali development liquid (it may only be hereafter called a "developer") used for said development

is an alkaline water solution, and can be conventionally chosen suitably from well-known alkali water solutions. As said alkali water solution, the developer which consists of silicic-acid alkali or nonreducing sugar, and a base is mentioned, and especially the thing of pH 12.5-13.5 is desirable. As said silicic-acid alkali, when it dissolves in water, alkalinity is shown, and alkali-metal silicates, such as a sodium silicate, a potassium silicate, and a silicic-acid lithium, silicic-acid ammonium, etc. are mentioned. Said silicic-acid alkali may be independent one sort, or may be used combining two or more sorts.

[0013] the mixing ratio of the silicon oxide SiO_2 and alkali oxide M_2O (M expresses alkali metal or ammonium.) said whose alkali water solution is the component of a silicate -- development nature can be easily adjusted by adjustment of a rate and concentration. Also in said alkali water solution, the mixed ratio ($\text{SiO}_2/\text{M}_2\text{O}$: mole ratio) of said silicon oxide SiO_2 and alkali oxide M_2O of the thing of 0.5-3.0 is desirable, and the thing of 1.0-2.0 is more desirable. If said $\text{SiO}_2/\text{M}_2\text{O}$ is less than 0.5, since alkali reinforcement becomes strong, when the evil in which an aluminum plate general-purpose as a base material of the original edition for lithography etc. will be etched may be produced and 3.0 is exceeded, development nature may fall.

[0014] Moreover, as concentration of the silicic-acid alkali in a developer, 1 - 10 % of the weight is desirable to the weight of an alkali water solution, 3 - 8 % of the weight is more desirable, and 4 - 7 % of the weight is the most desirable. When development nature and a throughput may decline when said concentration is less than 1 % of the weight, and it exceeds 10 % of the weight, it becomes easy to generate precipitate and a crystal, and further becomes easy to gel in the case of the neutralization at the time of waste fluid, and trouble may be caused to waste fluid processing.

[0015] In the developer which consists of said nonreducing sugar and base, nonreducing sugar mean the saccharide which does not have reducibility since it does not have the aldehyde group or ketone group of isolation nature, and it is classified into the glycoside which the trehalose mold oligosaccharide which reduction radicals combined, and the reduction radical and nonsugar of a saccharide combined, and the sugar-alcohol which hydrogenated the saccharide and was returned to it. In this invention, these all can be used suitably.

[0016] As said trehalose mold oligosaccharide For example, saccharose and trehalose are mentioned and an alkyl glycoside, a phenol glycoside, a mustard oil glycoside, etc. are mentioned as said glycoside, for example. As said sugar-alcohol, D, L-arabite, RIBITTO, xylitol, D, L-sorbitol, D, L-ANNITTO, D, L-idit, D, L-talitol, ZURISHITTO, AROZURUSHITTO, etc. are mentioned, for example. Furthermore, the maltitol obtained by the hydrogenation of disaccharide, the reductant (restoration water candy) acquired by the hydrogenation of an oligosaccharide can be mentioned suitably.

[0017] Among the above, as nonreducing sugar, sugar-alcohol and saccharose are desirable and it is more desirable at the point which has buffer action in pH field where D-sorbitol, saccharose, and a restoration water candy are moderate especially. As a rate of being independent, or combining two or more sorts, and occupying in a developer, these nonreducing sugars have 0.1 - 30 desirable % of the weight, and its 1 - 20 % of the weight is more desirable.

[0018] As a base, conventionally, alkali chemicals can be suitably chosen as said silicic-acid alkali or nonreducing sugar from well-known things, and can be combined with it. As said alkali chemicals, inorganic alkali chemicals, such as a sodium hydroxide, a potassium hydroxide, a lithium hydroxide, phosphoric-acid 3 sodium, phosphoric-acid 3 potassium, phosphoric-acid 3 ammonium, phosphoric-acid disodium, phosphoric-acid 2 potassium, phosphoric-acid 2 ammonium, a sodium carbonate, potassium carbonate, an ammonium carbonate, a sodium hydrogencarbonate, a potassium hydrogencarbonate, an ammonium hydrogencarbonate, sodium borate, a boric-acid potassium, and ammonium pentaborate, potassium citrate, citric-acid 3 potassium, a sodium citrate, etc. are mentioned, for example.

Furthermore, organic alkali chemicals, such as monomethylamine, dimethylamine, a trimethylamine, a monoethyl amine, diethylamine, triethylamine, mono-isopropylamine, diisopropylamine, TORIISOPUROPURUAMIN, n butylamine, monoethanolamine, diethanolamine, triethanolamine, monoisopropanolamine, G SOBUROPANORUAMISHI, ethyleneimine, ethylenediamine, and a pyridine, can also be mentioned suitably. These alkali chemicals may be used independently or may be

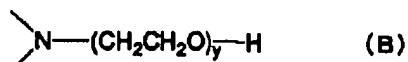
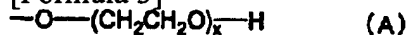
used combining two or more sorts.

[0019] Especially, a sodium hydroxide and a potassium hydroxide are desirable. The reason is because pH adjustment is attained in large pH field by adjusting the addition to nonreducing sugar. Moreover, since phosphoric-acid 3 sodium, phosphoric-acid 3 potassium, a sodium carbonate, potassium carbonate, etc. have buffer action in itself, it is desirable.

[0020] The alkali development liquid for the lithography versions of this invention contains and constitutes the ethyleneoxide addition product (it may only be hereafter called an "ethyleneoxide addition product") which has at least one radical expressed with the following type (A) or (B) in the above alkali water solutions.

[0021]

[Formula 3]



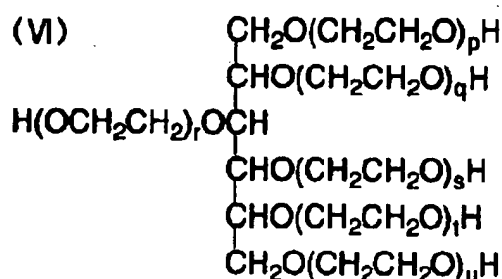
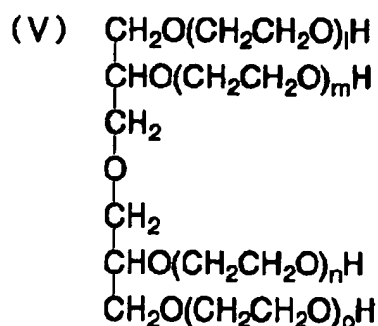
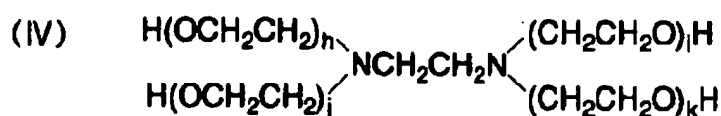
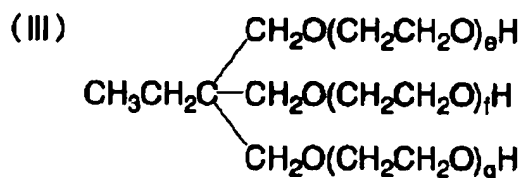
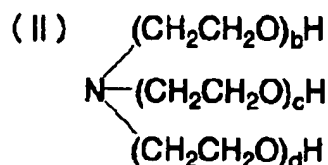
x and y express one or more integers among [type.]

[0022] Said ethyleneoxide addition product is a compound which has at least one of said the formulas (A) or (B) in the structure. Like said especially formula (B) Ethyleneoxide radical (it may be written as "EO" below CH₂CH₂O;) When it is the radical combined with a nitrogen atom, the compound which has the structure which two or more ethyleneoxide end groups (-(CH₂CH₂O) yH) combined with this nitrogen atom is also mentioned as a desirable compound.

[0023] Moreover, the (I) polyethylene glycol as any of straight chain structure and branching structure are sufficient as said ethyleneoxide addition product, for example, shown below, a (II) triethanolamine EO addition product, a TORIMECHI (III) roll propyl ether EO addition product, a (IV) ethylenediamine EO addition product, a (V) diglyceryl ether EO addition product, a (VI) sorbitol EO addition product, etc. are mentioned (a-u expresses one or more integers independently among the following structure expression, respectively.). However, in this invention, it is not limited to these.

[0024]

[Formula 4]



[0025] Especially, what has in structure the radical expressed with said formula (B) from a viewpoint which obtains sufficient dissolution deterrent to the image section is desirable, and the aforementioned (II) triethanolamine EO addition product is more desirable.

[0026] As molecular weight of said ethyleneoxide addition product, 500-5000 are desirable, 1000-4000 are more desirable, and 2000-3500 are the most desirable. When said molecular weight may be unable to obtain a dissolution deterrent [as opposed to / that it is less than 500 / the image section] and exceeds 5000, the development nature of the non-image section may fall. x in said formula (A) and (B), y, and one or more integers expressed with a-u in said structure expression can be suitably chosen in the range of the molecular weight of said ethyleneoxide.

[0027] As an addition of said ethyleneoxide addition product, 0.001 - 10 % of the weight is desirable in alkali development liquid, and 0.05 - 5 % of the weight is more desirable. When said addition may fully be unable to control the fusibility of the image section formed when it was less than 0.001 % of the weight and exceeds 10 % of the weight, the dissolution suppression effectiveness is too strong and development sensibility may fall.

[0028] even when the case where the high high molecular compound of fusibility is used for an alkali water solution by containing the above ethyleneoxide addition products in alkali development liquid, and alkali concentration are raised, without the image section dissolves and it causes an image defect -- an edge tone -- high -- the minute image which becomes possible [forming a sharp and clear image] and contains the dot section, a thin line, etc. -- quantity -- it is sharply reproducible. In addition, in this invention, the dissolution suppression effectiveness over the alkali water solution of the image section by said ethyleneoxide addition product is attained by the synergistic effect with the below-mentioned potassium ion.

[0029] Although the developer which consists of silicic-acid alkali or nonreducing sugar, and a base is used for the alkali development liquid of this invention as above-mentioned, as the cation component, Li^+ , Na^+ , K^+ , and NH_4^+ are used conventionally, and especially, by the system containing many cations with a small ionic radius, while the permeability to an image formation layer is highly excellent in development nature, it dissolves to the image section and produces an image defect. Therefore, in order to raise alkali concentration and to process completely, without there being a certain amount of limit and producing a defect in the image section so that an image formation layer (residual membrane) may not remain in the non-image section, a setup of delicate acidity-or-alkalinity conditions was required.

[0030] However, the dissolution suppression effectiveness of the image section can also be raised, without being able to control the permeability of the developer to the inside of an image formation layer, and reducing alkali concentration, i.e., development nature, by using a cation with the large ionic radius as said cation component. therefore -- without it invite an image defect to the image section, make this K^+ content (mole ratio) into 50 - 100% among the above-mentioned cations in this invention to all the cation components contain in alkali development liquid, i.e., an alkali metal cation, and the total content of ammonium ion using the largest potassium ion (K^+) of an ionic radius further, and maintain development nature -- an edge tone -- high -- a sharp and clear image can be form. the minute image which contains the dot section, a thin line, etc. especially -- more -- quantity -- it is effective when reappearing sharply.

[0031] As said cation component, other cations besides the above-mentioned alkali-metal cation and ammonium ion can be used.

[0032] As for the alkali development liquid for the lithography versions of this invention, x and y express one or more integers to intramolecular among a $-\text{O}(\text{CH}_2\text{CH}_2\text{O})_x\text{H}$ or $-\text{N}(\text{CH}_2\text{CH}_2\text{O})_y\text{H}$ [type as above-mentioned.] without it contains the ethyleneoxide addition product which comes out and has at least one radical expressed, and it invites an image defect to the image section further by making content (mole ratio) of potassium ion into 50 - 100% to an alkali-metal cation and the total content of ammonium ion, maintaining development nature -- an edge tone -- high -- it is the alkali development liquid which can form a sharp and clear image.

[0033] The following additives can be added to the alkali development liquid for the lithography versions of this invention in order to raise the development engine performance further. For example, NaCl given in JP,58-75152,A, KCl , EDTA given in neutral salt, such as KBr , and JP,58-190952,A, To chelating agents, such as NTA, and JP,59-121336,A, a publication, $[\text{Co}(\text{NH}_3)_6]$ To complexes, such as Cl_3 and $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$, and JP,50-51324,A, a publication, An-anion or amphoteric surface active agents, such as alkyl naphthalene sulfonic-acid soda, N-tetradecyl-N, and N-dihydroxyethyl betaine, Cationic polymers, such as the 4th class ghost of methyl chloride of p-dimethyl aminomethyl polystyrene given in nonionic surfactants given in a U.S. Pat. No. 4,374,920 specification, such as tetramethyl crepe-de-Chine diol, and JP,55-95946,A, [0034] Polyampholyte, such as a copolymer of vinylbenzyl trimethylammonium chloride and acrylic-acid soda given in JP,56-142528,A, Reducibility mineral salt given in JP,57-192951,A, such as sodium sulfite, Inorganic lithium compounds given in JP,58-59444,A, such as a lithium chloride, organic [given in JP,59-75255,A] -- the organic metal surfactant containing Si, Ti, etc. -- The quarternary ammonium salt of a publication, such as tetra-alkylammonium oxide, etc. is mentioned in an organic boron compound given in JP,59-84241,A, and EP No. 101010 specification. [0035] The alkali development liquid for the lithography versions of this invention is applicable suitable

also for the development of the image recording ingredient which has an image formation layer containing o-quinone diazide compound used widely conventionally, although it is most suitable for the development of the original edition for lithography which has the image formation layer of the infrared laser induction mold mentioned later.

[0036] Moreover, especially in recent years, the auto-processor for the plates for printing is widely used in platemaking / printing industry for rationalization of a platemaking activity, and a standardization. This auto-processor sprays and carries out the development of each processing liquid pumped up with the pump from a spray nozzle, consisting of the development section and the after-treatment section generally, consisting of the equipment and each processing cistern which convey the plate for printing, and spray equipment, and conveying the printing version [finishing / exposure] horizontally. Moreover, how to make carry out immersion conveyance of the plate for printing with a guide-among liquid roll etc. into the processing cistern with which processing liquid was filled, and process is also learned recently. It can process in such automatic processing, supplementing each processing liquid with a replenisher according to throughput, the operating time, etc.

[0037] In this case, a lot of image formation ingredients can be processed, without exchanging the developer in a long duration developing tank by adding into a developer by making a water solution with alkali reinforcement higher than a developer into a replenisher. Also in this invention, it is a desirable mode to adopt this supplement method. Also as said replenisher, the alkali development liquid for the lithography versions of this invention can be used as a water solution with alkali reinforcement higher than the developer for development.

[0038] In said developer and replenisher, various surfactants, organic solvents, etc. can also be added if needed in order to raise the parent ink nature of promotion of development nature, control, distribution of development dregs, and the printing version image section. As said surface active agent, an anion system, a cation system, the Nonion system, or an amphoteric surface active agent is desirable, and benzyl alcohol etc. is desirable as said organic solvent. Moreover, addition of a polyethylene glycol, its derivative, a polypropylene glycol, or its derivative is also desirable.

[0039] Furthermore, mineral salt system reducing agents, such as sodium salt of hydroquinone, resorcinol, a sulfurous acid, or sulfurous-acid hydro acid or potassium salt, an organic carboxylic acid, a defoaming agent, and a water softener can also be added if needed.

[0040] After treatment is made with the rinse in which the lithography version by which the development was carried out using the alkali development liquid and the replenisher of this invention contains rinsing water, a surface active agent, etc., and the desensitization liquid containing gum arabic or a starch derivative. It can carry out to this after treatment combining various these processing liquid. Moreover, it is also possible to consider as the so-called disposable mode of processing substantially processed with intact development liquid.

[0041] Next, the original edition for lithography used for the platemaking approach of the lithography version of this invention is explained. Said original edition for lithography comes to have an image formation layer on a base material, and it comes to have other layers if needed further. (A) infrared absorption agent is contained in said image formation layer. Further at least (B) alkali fusibility high molecular compound, (C) While making it dissolve with an alkali fusibility high molecular compound and reducing the solubility to the alkali water solution of this alkali fusibility high molecular compound, the compound and the (D) cyclic anhydride to which this soluble fall operation decreases with heating are contained, and it is constituted. Moreover, in the case of the original edition for lithography of a negative mold, the compound which generates an acid with (E) heat further, and the cross linking agent which constructs a bridge with the (F) acid are contained in the image formation layer, and it is constituted.

[0042] - A (A) infrared absorption agent-infrared absorption agent (it may be hereafter called "(A) component") has the function to change the absorbed infrared radiation into heat. In this invention, as a usable infrared absorption agent, the color or pigment which may absorb infrared radiation efficient to a wavelength field with a wavelength of 750nm - 1200nm preferably to a field with a wavelength of 700nm or more is desirable, and the color or pigment which has the absorption maximum at a field with

a wavelength of 760nm - 1200nm is more desirable.

[0043] As said color, the well-known thing of a publication is mentioned to a commercial color or commercial reference (for example, a "color handbook", the Society of Synthetic Organic Chemistry, Japan edit, Showa 45 annual publications), for example, colors, such as azo dye, metallic complex azo dye, pyrazolone azo dye, a naphthoquinone color, anthraquinone dye, phthalocyanine dye, a carbonium color, a quinonimine dye, methine dye, cyanine dye, SUKUWARIRIUMU coloring matter, pyrylium salt, and a metal thio rate complex, are mentioned.

[0044] Especially, for example JP,58-125246,A, JP,59-84356,A, Cyanine dye given in JP,59-202829,A, JP,60-78787,A, etc., Methine dye given in JP,58-173696,A, JP,58-181690,A, JP,58-194595,A, etc., JP,58-112793,A, JP,58-224793,A, JP,59-48187,A, A naphthoquinone color given in JP,59-73996,A, JP,60-52940,A, JP,60-63744,A, etc., SUKUWARIRIUMU coloring matter given in JP,58-112792,A etc., cyanine dye given in the British JP,434,875,B specification, a dihydroperi MIJIN squarylium color given in a U.S. Pat. No. 5,380,635 number specification, etc. are mentioned suitably.

[0045] Moreover, a near-infrared absorption sensitizer given in a U.S. Pat. No. 5,156,938 specification is also desirable. The arylbenzo(thio)pyrylium salt by which the publication was permuted by the U.S. Pat. No. 3,881,924 specification, TORIMECHIN thia pyrylium salt given in JP,57-142645,A (U.S. Pat. No. 4,327,169 specification), JP,58-181051,A, 58-220143, 59-41363, 59-84248, 59-84249, 59-146063, A pyrylium system compound given in 59-146061, cyanine dye given in JP,59-216146,A, Pentamethine thio pyrylium salt given in a U.S. Pat. No. 4,283,475 specification etc., A pyrylium compound given in JP,5-13514,B and 5-19702, Epolight III-178, Epolight III-130, Epolight III-125, Epolight IV-62A etc. is desirable.

[0046] Furthermore, the near-infrared absorption color expressed with a U.S. Pat. No. 4,756,993 specification by the formula (I) of a publication and (II) can also be mentioned as a suitable thing. Cyanine dye, SUKUWARIRIUMU coloring matter, pyrylium salt, and a nickel thio rate complex are more desirable among the above.

[0047] As said pigment, a commercial pigment or a commercial Color Index (C. I.) handbook, The "newest pigment handbook" (the volume for Japanese pigment American Institute of Technology, 1977 annual publications), the "newest pigment applied technology" (CMC publication) The pigment of a publication is mentioned to 1986 annual publications and a "printing ink technique" (CMC publication, 1984 annual publications), for example, a black pigment, a yellow pigment, an orange pigment, brown pigments, red pigments, a purple pigment, a blue pigment, green pigments, a fluorescent pigment, a metallic flake pigment, and other polymer joint coloring matter are mentioned.

[0048] Specifically, insoluble azo pigment, an azo lake pigment, a disazo condensation pigment, a chelate azo pigment, phthalocyanine pigment, an anthraquinone system pigment, perylene and a peri non system pigment, a thioindigo system pigment, the Quinacridone system pigment, a dioxazine system pigment, an isoindolinone system pigment, a kino FUTARON system pigment, a blue-and-white porcelain lake pigment, an azine pigment, a nitroso pigment, a nitro pigment, a natural pigment, a fluorescent pigment, an inorganic pigment, carbon black, etc. are mentioned. Especially, carbon black is desirable.

[0049] Said pigment may be used without carrying out surface treatment, and after performing surface treatment, it may be used. As the approach of surface treatment, the approach of carrying out the surface coat of resin or the wax, the approach to which a surfactant is made to adhere, the method of combining the active substance (for example, a silane coupling agent, an epoxy compound, poly isocyanate, etc.) with a pigment front face, etc. are mentioned. The approach of such surface treatment is indicated by "the property of metallic soap, application" (Saiwai Shobo), the "printing ink technique" (CMC publication, 1984 annual publications), and the "newest pigment applied technology" (CMC publication, 1986 annual publications).

[0050] As a particle size of said pigment, 0.01 micrometers - 10 micrometers are desirable, 0.05 micrometers - 5 micrometers are more desirable, and 0.1 micrometers - 1 micrometer is the most desirable. When the stability of the distributed object when preparing dispersion liquid, such as sensitization layer coating liquid, when said particle size was less than 0.01 micrometers may deteriorate

and it exceeds 10 micrometers, the homogeneity of an image formation layer may get worse.

[0051] As an approach of distributing a pigment, it can be suitably chosen as ink manufacture, toner manufacture, etc. from well-known distributed techniques, such as a general-purpose disperser. As said disperser, an ultrasonic distribution machine, a sand mill, attritor, a pearl mill, a super mill, a ball mill, an impeller, DESUPAZA, KD mill, a colloid mill, a dynatron, 3 roll mills, a pressurized kneader, etc. are mentioned. About the detail, the "newest pigment applied technology" (CMC publication, 1986 annual publications) has a publication.

[0052] As a content of said color or a pigment, 0.01 - 50 % of the weight is desirable to the total-solids weight of an image formation layer, 0.1 - 10 % of the weight is more desirable, and in the case of a color, 0.5 - 10 % of the weight is still more desirable, and when it is a pigment, 3.1 - 10 % of the weight is the most desirable. When sensibility may become low when said content is less than 0.01 % of the weight, and it exceeds 50 % of the weight, the homogeneity of an image formation layer may fall and the endurance may deteriorate.

[0053] You may add in the same layer as other components, and said color or pigment may prepare another layer, and may add it there. When considering as another layer, it is desirable to add in the layer which adjoins the layer containing the below-mentioned (C) component. Moreover, another layer may be made to contain, respectively although containing in the same layer is desirable as for a color or a pigment, and an alkali fusibility high molecular compound.

[0054] - As an usable alkali fusibility high molecular compound (it may be hereafter called "(B) component"), the macromolecule of alkali water solubility which has the acidic group of following the (1) - (3) in the structure of a principal chain and/or a side chain can be used for (B) alkali fusibility high-molecular-compound-this invention.

(1) Phenolic group (-Ar-OH)

(2) Sulfonamide radical (-SO₂ NH-R)

(3) Permutation sulfonamide system acid radical (henceforth an "activity imide radical")

[-SO₂NHCOR, -SO₂NHSO₂R, -CONHSO₂R]

Ar expresses the divalent aryl connection radical which may have the substituent among aforementioned (1) - (3), and R expresses the hydrocarbon group which may have the substituent. Although the example is shown below, in this invention, it is not limited to these.

[0055] (1) As an alkali fusibility high molecular compound which has a phenolic group For example, the condensation polymerization object of a phenol and formaldehyde, the condensation polymerization object of m-cresol and formaldehyde, The condensation polymerization object of p-cresol and formaldehyde, the condensation polymerization object of m-/p-mixing cresol and formaldehyde, a phenol, and cresol (any of m-, p-, or m-/p-mixing are sufficient.) The condensation polymerization object of novolak resin, such as a condensation polymerization object with formaldehyde, or pyrogallol, and an acetone can be mentioned. Furthermore, the high molecular compound to which the polymerization of the monomer which has a phenolic group in a side chain was carried out can also be mentioned.

[0056] The high molecular compound which is made to carry out copolymerization of other polymerization nature monomers for the polymerization nature monomer which becomes a side chain from the low molecular weight compound which has one or more unsaturated bonds in which a phenolic hydroxyl group and a polymerization are possible as a high molecular compound which has a phenolic hydroxyl group, respectively to homopolymerization or this polymerization nature monomer, and is obtained is mentioned. As a monomer which has a phenolic group in a side chain, the acrylamide and methacrylamide which have a phenolic group in a side chain, acrylic ester, methacrylic ester, or hydroxystyrene is mentioned.

[0057] Specifically N-(2-hydroxyphenyl) acrylamide, N-(3-hydroxyphenyl) acrylamide, N-(4-hydroxyphenyl) acrylamide, N-(2-hydroxyphenyl) methacrylamide, N-(3-hydroxyphenyl) methacrylamide, N-(4-hydroxyphenyl) methacrylamide, o-hydroxyphenyl acrylate, m-hydroxyphenyl acrylate, p-hydroxyphenyl acrylate, o-hydroxyphenyl methacrylate, m-hydroxyphenyl methacrylate, p-hydroxyphenyl methacrylate, o-hydroxystyrene, m-hydroxystyrene, p-hydroxystyrene, 2-(2-

hydroxyphenyl) ethyl acrylate, 2-(3-hydroxyphenyl) ethyl acrylate, 2-(4-hydroxyphenyl) ethyl acrylate, 2-(2-hydroxyphenyl) ethyl methacrylate, 2-(3-hydroxyphenyl) ethyl methacrylate, 2-(4-hydroxyphenyl) ethyl methacrylate, etc. can be mentioned suitably.

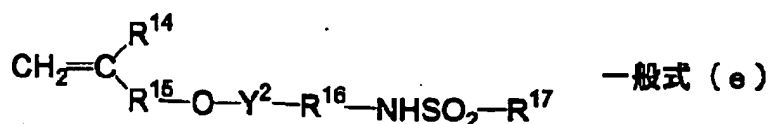
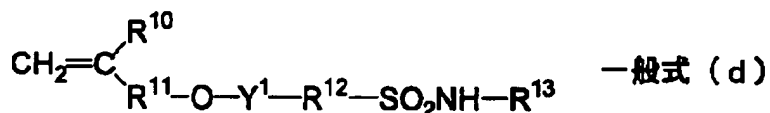
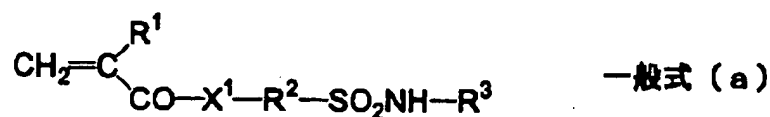
[0058] As weight average molecular weight of the alkali fusibility high molecular compound which has said phenolic group, the thing of 2.0×10^2 to 1.0×10^5 has the desirable thing of 5.0×10^2 to 2.0×10^5 in respect of image formation nature as number average molecular weight.

[0059] Moreover, the alkali fusibility high molecular compound which has a phenolic group may be used not only combining use independently but combining two kinds or more. When combining, the condensation polymerization object of the phenol and formaldehyde which have as substituents an alkyl group of carbon numbers 3-8 like the condensation polymerization object of t-butylphenol and formaldehyde which are indicated by the U.S. Pat. No. 4123279 specification, and the condensation polymerization object of octyl phenol and formaldehyde may be used together. The thing of 2.0×10^2 to 1.0×10^5 has [these condensation polymerization objects / weight average molecular weight] the thing of 5.0×10^2 to 2.0×10^5 , and desirable number average molecular weight.

[0060] (2) The copolymer which carried out copolymerization of other polymerization nature monomers to the polymer which makes the compound which has a sulfonamide radical main monomer configuration unit as an alkali fusibility high molecular compound which has a sulfonamide radical, for example, i.e., a homopolymer, and said monomer configuration unit can be mentioned. As a polymerization nature monomer which has a sulfonamide radical, the monomer which consists of a low molecular weight compound which has sulfonamide radical-SO₂-NH- which at least one hydrogen atom combined, and the unsaturated bond in which a polymerization is possible one or more on a nitrogen atom, respectively is mentioned into 1 molecule. Especially, the low molecular weight compound which has an acryloyl radical, an allyl group or a BINIROKISHI radical, and a permutation, a mono-permutation amino sulfonyl group or a permutation sulfonyl imino group is desirable. Although the compound expressed with following general formula (a) - (e) is mentioned as said low molecular weight compound, for example, in this invention, it is not limited to these.

[0061]

[Formula 5]



[0062] X1 and X2 express an oxygen atom or NR7 independently among a formula, respectively. R1 and R4 express a hydrogen atom or CH3 independently, respectively. R2, R5, R9, R12, and R16 express the alkylene group, the cyclo alkylene group, arylene radical, or aralkylene group of the carbon numbers 1-12 which may have the substituent independently, respectively. R3, R7, and R13 express the alkyl group, the cycloalkyl radical, aryl group, or aralkyl radical of the carbon numbers 1-12 which may have the hydrogen atom and the substituent independently, respectively. Moreover, R6 and R17 express the alkyl group of the carbon numbers 1-12 which may have the substituent independently, respectively, a cycloalkyl radical, an aryl group, and an aralkyl radical. R8, R10, and R14 express a hydrogen atom or CH3 independently, respectively. R11 and R15 express the alkylene group, the cyclo alkylene group, arylene radical, or aralkylene group of the carbon numbers 1-12 which may have single bond or a substituent independently, respectively. Y1 and Y2 express single bond or CO independently, respectively.

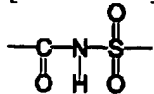
[0063] Especially, m-aminosulfonylphenylmethacrylate, N-(p-amino sulfonyl phenyl) methacrylamide, N-(p-amino sulfonyl phenyl) acrylamide, etc. can be used suitably.

[0064] (3) The polymer which makes the compound which has an activity imide radical a main monomer configuration unit as an alkali fusibility high molecular compound which has an activity imide radical, for example can be mentioned. The high molecular compound which is made to carry out copolymerization of the monomer which consists of a low molecular weight compound which has the activity imide radical expressed with the following type and the unsaturated bond in which a polymerization is possible one or more, respectively, and is obtained [monomer] in homopolymerization or the polymerization nature monomer of others [monomer / this] in 1 molecule as a polymer which makes the compound which has an activity imide radical a main monomer

configuration unit can be mentioned.

[0065]

[Formula 6]



[0066] Specifically as such a compound, N-(p-tosyl) methacrylamide, N-(p-tosyl) acrylamide, etc. can be mentioned suitably.

[0067] Furthermore, the high molecular compound to which the polymerization of any two or more kinds in the polymerization nature monomer which has said phenolic group besides the above, the polymerization nature monomer which has a sulfonamide radical, and the polymerization nature monomer which has an activity imide radical was carried out, or the high molecular compound which is made to carry out copolymerization of the polymerization nature monomer of further others to these two or more sorts of polymerization nature monomers, and is obtained is also mentioned suitably.

[0068] As a compounding ratio (M1:M2 and/or M3; weight ratio) in the case of carrying out copolymerization of the polymerization nature monomer (M3) which has the polymerization nature monomer (M2) which has a sulfonamide radical, and/or an activity imide radical to the polymerization nature monomer (M1) which has a phenolic group, 50:50-5:95 are desirable and 40:60-10:90 are more desirable.

[0069] the monomer configuration unit which has either which is chosen from said acidic group (1) - (3) into this copolymer when an alkali fusibility high molecular compound is the copolymer which consists of a monomer configuration unit which has either which is chosen from said acidic group (1) - (3), and a configuration unit of other polymerization nature monomers -- more than 10 mol % -- containing -- desirable -- more than 20 mol % -- containing is more desirable. When the content of said monomer configuration unit is less than [10 mol %], development latitude may become narrow, without acquiring sufficient alkali fusibility.

[0070] As the synthetic approach of said copolymer, a graft copolymerization method better known than before and a block can use heavy lawfulness, a random copolymerization method, etc.

[0071] Said acidic group (1) As other polymerization nature monomers which carry out copolymerization to the polymerization nature monomer which makes a configuration unit the monomer which has either which is chosen from - (3), although the monomer mentioned to following (a) - (l) can be mentioned, in this invention, it is not limited to these, for example.

[0072] (a) The acrylic ester and methacrylic ester which have aliphatic series hydroxyl groups, such as 2-hydroxyethyl acrylate or 2-hydroxyethyl methacrylate.

(b) Alkyl acrylate, such as a methyl acrylate, an ethyl acrylate, acrylic-acid propyl, butyl acrylate, acrylic-acid amyl, acrylic-acid hexyl, acrylic-acid octyl, acrylic-acid benzyl, acrylic-acid-2-chloro ethyl, glycidyl acrylate, and N-dimethylamino ethyl acrylate.

(c) Alkyl methacrylate, such as a methyl methacrylate, ethyl methacrylate, methacrylic-acid propyl, methacrylic-acid butyl, methacrylic-acid amyl, methacrylic-acid hexyl, cyclohexyl methacrylate, methacrylic-acid benzyl, methacrylic-acid-2-chloro ethyl, glycidyl methacrylate, and N-dimethylaminoethyl methacrylate.

[0073] (d) Acrylamide or methacrylamide, such as acrylamide, methacrylamide, N-methylol acrylamide, N-ethyl acrylamide, N-hexyl methacrylamide, N-cyclohexyl acrylamide, N-hydroxyethyl acrylamide, N-phenyl acrylamide, N-nitrophenyl acrylamide, and N-ethyl-N-phenyl acrylamide.

(e) Vinyl ether, such as ethyl vinyl ether, 2-chloro ethyl vinyl ether, hydroxyethyl vinyl ether, propyl vinyl ether, butyl vinyl ether, octyl vinyl ether, and phenyl vinyl ether

(f) Vinyl ester, such as vinyl acetate, vinyl chloro acetate, vinyl butyrate, and benzoic-acid vinyl

(g) Styrene, such as styrene, alpha methyl styrene, methyl styrene, and chloro methyl styrene

[0074] (h) Vinyl ketones, such as a methyl vinyl ketone, an ethyl vinyl ketone, a propyl vinyl ketone, and a phenyl vinyl ketone

- (i) Olefins, such as ethylene, a propylene, an isobutylene, a butadiene, and an isoprene
- (j) N-vinyl pyrrolidone, N-vinylcarbazole, 4-vinylpyridine, acrylonitrile, a methacrylonitrile, etc.
- (k) Partial saturation imide, such as maleimide, N-acryloyl acrylamide, N-acetyl methacrylamide, N-propionyl methacrylamide, and N-(p-chloro benzoyl) methacrylamide.
- (l) Unsaturated carboxylic acid, such as an acrylic acid, a methacrylic acid, a maleic anhydride, and an itaconic acid.

[0075] 500 or more things have [weight average molecular weight] 2000 or more and desirable number average molecular weight, as said alkali water-soluble high molecular compound, it is not concerned with a homopolymer and a copolymer, but is the point of film reinforcement, and the thing of 1.1-10 has [weight average molecular weight is / 5000-300000, and number average molecular weight / 800-250000, and] more desirable degree of dispersion (weight average molecular weight/number average molecular weight). Moreover, when said alkali fusibility high molecular compounds are phenol-formaldehyde resin, cresol-aldehyde resin, etc., weight average molecular weight is 500-20000, and the thing of 200-10000 has desirable number average molecular weight.

[0076] As a content of said alkali water-soluble high molecular compound, 30 - 99 % of the weight is desirable to the total-solids weight of an image formation layer, 40 - 95 % of the weight is more desirable, and 50 - 90 % of the weight is the most desirable. When the endurance of an image formation layer may fall when said content is less than 30 % of the weight, and 99 % of the weight is exceeded, sensibility and endurance may fall. Moreover, said high molecular compound may be used combining two or more kinds, using only one kind.

[0077] - (C) While making it dissolve with said alkali fusibility high molecular compound and reducing the solubility to the alkali water solution of this alkali fusibility high molecular compound The this compound-(C) component for which this soluble fall operation decreases with heating By work of the functional group of the hydrogen bond nature which exists in intramolecular, while compatibility with the alkali fusibility high molecular compound (aforementioned [B]) is good and can form the uniform coating liquid for image formation layers The compound which has the function (soluble depressant action) which controls the alkali fusibility of this alkali fusibility high molecular compound by the interaction with an alkali fusibility high molecular compound is pointed out.

[0078] Moreover, although said soluble depressant action to an alkali fusibility high molecular compound disappears with heating, if sufficient energy for decomposition is not given by terms and conditions, such as a laser output and irradiation time, when this infrared absorption agent itself is the compound disassembled with heating, there is a possibility that soluble depressant action of an alkali fusibility high molecular compound cannot fully be reduced, and sensibility may fall. For this reason, as pyrolysis temperature of the (C) component, 150 degrees C or more are desirable.

[0079] (C) As a component, it can choose suitably in consideration of an interaction with the alkali fusibility high molecular compound (aforementioned [B]) from the compounds which can interact with said alkali fusibility high molecular compounds, such as a sulfone compound, ammonium salt, phosphonium salt, and an amide compound. Especially, as the aforementioned (B) component, when using novolak resin independently, "the component (A+C)" mentioned later is desirable, and cyanine-dye A illustrated below is more desirable. (A+C) About a component, it mentions later.

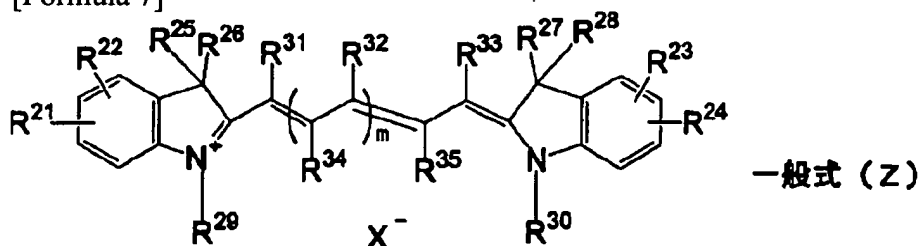
[0080] (C) Generally as a compounding ratio (C/B) of a component and the alkali fusibility high molecular compound (aforementioned [B]), 1 / 99 - 25/75 are desirable. When an interaction with an alkali fusibility high molecular compound becomes inadequate, it may be unable to reduce alkali fusibility, it may be unable to carry out image formation good, it will exceed 25/75, if said mixing ratio has too little less than 1/99, i.e., the (C) component, namely, there are too many (C) components, an interaction may become excessive and sensibility may fall remarkably.

[0081] - In A+C component-this invention, it can replace with the aforementioned (A) component and the (C) component, and the compound (A+C) (component) which has the property of these both sides can be used. The aforementioned (A+C) component is basic dye which may be further compatible in an alkali fusibility high molecular compound and fitness while it has the property (namely, property of the (A) component) to absorb light and to generate heat and moreover has an absorption region in a 700-

1200nm wavelength field. (A+C) Since a component has the radical which interacts with alkali fusibility high molecular compounds, such as ammonium and an iminium radical, to the intramolecular (namely, property of the (C) component), it can interact with said high molecular compound, and can control the alkali fusibility. As the aforementioned (A+C) component, the compound expressed with the following general formula (Z) can be mentioned, for example.

[0082]

[Formula 7]



[0083] R21-R24 express the alkyl group of the carbon numbers 1-12 which may have the hydrogen atom or the substituent independently, respectively, an alkenyl radical, an alkoxy group, a cycloalkyl radical, and an aryl group among said general formula (Z), and R21, and R22, R23 and R24 may form the ring structure unitedly, respectively. As R21-R24, a hydrogen atom, a methyl group, an ethyl group, a phenyl group, the dodecyl, a naphthyl group, a vinyl group, an allyl group, a cyclohexyl radical, etc. are mentioned, and, as for these radicals, you may have the substituent further, for example. Here, as a substituent, a halogen atom, a carbonyl group, a nitro group, a nitrile group, a sulfonyl group, a carboxyl group, KARUMBON acid ester, a sulfonate, etc. are mentioned, for example.

[0084] R25-R30 express among a formula the alkyl group of the carbon numbers 1-12 which may have the substituent independently, respectively, and as said R25-R30, a methyl group, an ethyl group, a phenyl group, the dodecyl, a naphthyl group, a vinyl group, an allyl group, a cyclohexyl radical, etc. are mentioned, and, as for these radicals, you may have the substituent further, for example. Here, as a substituent, a halogen atom, a carbonyl group, a nitro group, a nitrile group, a sulfonyl group, a carboxyl group, carboxylate, a sulfonate, etc. are mentioned, for example.

[0085] R31-R33 express among a formula the alkyl group of the carbon numbers 1-8 which may have a hydrogen atom, a halogen atom, or a substituent independently, respectively, said R32 may combine with said R31 or R33, and may form the ring structure, in the case of $m > 2$, two or more R32 comrades may join together, and the ring structure may be formed. As said R31-R33, a cyclopentyl ring, a cyclohexyl ring, etc. which a chlorine atom, a cyclohexyl radical, and R32 comrades come to join together are mentioned, and, as for these radicals, you may have the substituent further, for example. Here, as a substituent, a halogen atom, a carbonyl group, a nitro group, a nitrile group, a sulfonyl group, a carboxyl group, carboxylate, a sulfonate, etc. are mentioned, for example. Moreover, m expresses the integer of 1-8 and 1-3 are desirable especially.

[0086] R34-R35 express among a formula the alkyl group of the carbon numbers 1-8 which may have a hydrogen atom, a halogen atom, or a substituent independently, respectively, said R34 may combine with R35 and may form the ring structure, in the case of $m > 2$, two or more R34 comrades may join together, and the ring structure may be formed. As said R34-R35, a cyclopentyl ring, a cyclohexyl ring, etc. which a chlorine atom, a cyclohexyl radical, and R34 comrades come to join together are mentioned, and, as for these radicals, you may have the substituent further, for example. Here, as a substituent, a halogen atom, a carbonyl group, a nitro group, a nitrile group, a sulfonyl group, a carboxyl group, carboxylate, a sulfonate, etc. are mentioned, for example. Moreover, m expresses the integer of 1-8 and 1-3 are desirable especially.

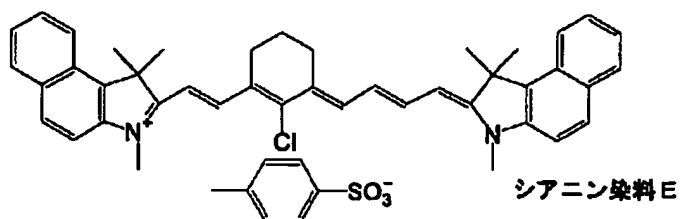
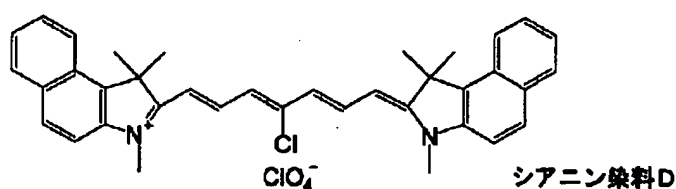
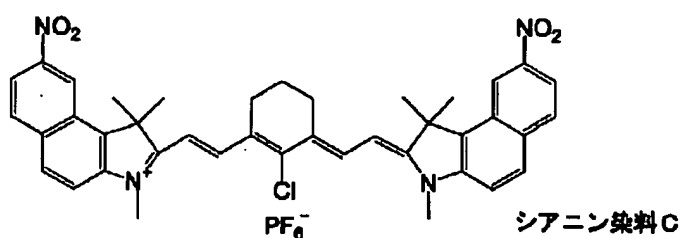
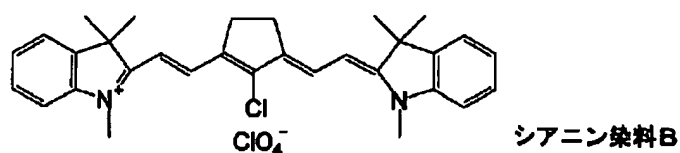
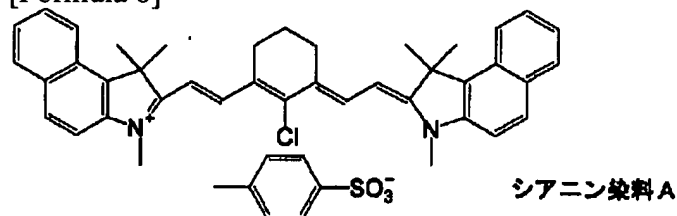
[0087] X- expresses an anion among a formula. For example, 4 perchloric acid, boric-acid fluoride, A 6 phosphorus-fluoride acid, a triisopropyl naphthalene sulfonic acid, 5-nitro-O-toluenesulfonic acid, 5-sulfosalicylic acid, 2, 5-dimethylbenzene sulfonic acid, 2 and 4, 6-trimethyl benzenesulfonic acid, 2-nitrobenzene sulfonic acid, 3-chlorobenzene sulfonic acid, 3-bromobenzene sulfonic acid, 2-fluoro

capryl lactam naphthalene sulfonic acid, dodecylbenzenesulfonic acid, a 1-naphthol-5-sulfonic acid, 2-methoxy-4-hydroxy-5-benzoyl-benzenesulfonic acid, Para toluenesulfonic acid, etc. are mentioned. Especially, alkyl aromatic series sulfonic acids, such as 6 phosphorus-fluoride acid, triisopropyl naphthalene sulfonic-acid, 2, and 5-dimethylbenzene sulfonic acid, are desirable.

[0088] The compound expressed with said general formula (Z) is not restricted to these in this invention, although it is the compound generally called cyanine dye and the compound shown below is specifically used suitably.

[0089]

[Formula 8]



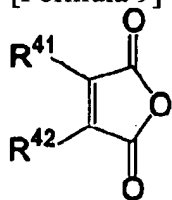
[0090] When using the aforementioned (A+C) component which replaces with the above-mentioned (A) component and the (C) component, and has the property of these both sides, as an amount-used ratio [(A+C)/(B)] of a ** (A+C) component and the aforementioned (B) component, 1 / 99 - 30/70 are desirable, and 1 / 99 - 25/75 are more desirable.

[0091] - Use a cyclic anhydride for the original edition for (D) cyclic anhydride-lithography further. In the structure, it has the carbonyl group of a carboxylic anhydride, and association to conjugate, and catabolic rate is controlled by increasing the stability of the carbonyl group, it decomposes at a suitable rate in the preservation passage of time, and this cyclic anhydride generates an acid. Therefore,

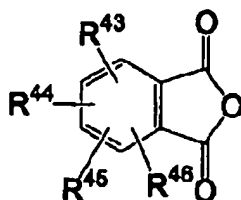
development nature degradation by the preservation passage of time is suppressed, and development nature can be maintained to stability for a long period of time. As said cyclic anhydride, the compound expressed with the following general formula (I) or (II) is mentioned.

[0092]

[Formula 9]



一般式 (I)



一般式 (II)

[0093] R41 and R42 express the alkyl group, the alkenyl radical, the alkoxy group, the cycloalkyl radical, the aryl group, the carbonyl group, carboxy group, or carboxylate radical of the carbon numbers 1-12 which may have a hydrogen atom or a substituent independently, respectively among a general formula (I). In addition, R41 and R42 may be connected mutually and may form the ring structure.

[0094] As said R41 and R42, a hydrogen atom or the alkyl group which is not permuted [of carbon numbers 1-12], an aryl group, an alkenyl radical, a cycloalkyl radical, etc. are mentioned suitably, and a hydrogen atom, a methyl group, an ethyl group, a phenyl group, the dodecyl, a naphthyl group, a vinyl group, an allyl group, a cyclohexyl radical, etc. are mentioned, and, specifically, as for these radicals, you may have the substituent further, for example.

[0095] When said R41 and R42 connect mutually and they form a ring structure, as the annular radical, a phenylene group, a naphthylene radical, a cyclohexene radical, a cyclopentene radical, etc. are mentioned, for example. As said substituent, a halogen atom, a hydroxy group, a carbonyl group, a sulfonate, a nitro group, a nitrile group, etc. are mentioned, for example.

[0096] R43, R44, R45, and R46 express the alkyl group, the alkenyl radical, the alkoxy group, a cycloalkyl radical, an aryl group, a carbonyl group, a carboxy group, or a carboxylate radical of the carbon numbers 1-12 which may have halogen atoms, such as a hydrogen atom, a hydroxy group, and chlorine, a nitro group, a nitrile group, or a substituent independently, respectively etc. among said general formula (II). As said R43, R44, R45, and R46, a hydrogen atom, a halogen atom, the alkyl group that is not permuted [of carbon numbers 1-12], an alkenyl radical, the aryl group of carbon numbers 6-12, etc. are mentioned suitably, and, specifically, a methyl group, a vinyl group, a phenyl group, an allyl group, etc. are mentioned, for example. These radicals may have the substituent further. As said substituent, a halogen atom, a hydroxy group, a carbonyl group, a sulfonate, a nitro group, a nitrile group, a carboxy group, etc. are mentioned, for example.

[0097] In this invention, phthalic anhydride, 3, 4 and 5, 6-tetrahydro phthalic anhydride, tetra-chloro phthalic anhydride, 3-hydroxy phthalic anhydride, 3-methyl phthalic anhydride, 3-phenyl phthalic anhydride, an anhydrous TORIMETTO acid, an anhydrous PIROMETTO acid, a maleic anhydride, a phenyl maleic anhydride, a dimethyl maleic anhydride, a dichloro maleic anhydride, a chloro maleic anhydride, etc. are suitably mentioned as a cyclic anhydride.

[0098] As a content of said cyclic anhydride, 0.5 - 20 % of the weight is desirable to the total-solids weight of an image formation layer, 1 - 15 % of the weight is more desirable, and 1 - 10 % of the weight is the most desirable. An image may be unable to be formed if that said content becomes inadequate [the maintenance effectiveness of development nature] for it to be less than 0.5 % of the weight exceeds ** and 20 % of the weight.

[0099] - When the image formation ingredient of compound-this invention which generates an acid with (E) heat is a negative mold, use together the compound (henceforth an "acid generator") which generates an acid at the time of heating. This acid generator points out the compound which decomposes by heating at 100 degrees C or more, and generates an acid. As a generated acid, it is desirable that electric dissociation exponents, such as a sulfonic acid and a hydrochloric acid, are two or less strong acid. The

thing of a publication is mentioned [Japanese Patent Application No. / No. 66733 / 11 to] as said acid generator.

[0100] As an addition of said acid generator, 0.01 - 50 % of the weight is desirable to the total-solids weight of an image formation layer, 0.1 - 40 % of the weight is more desirable, and 0.5 - 30 % of the weight is the most desirable.

[0101] - When the original edition for lithography of cross linking agent-this invention which constructs a bridge with the (F) acid is a negative mold, use together the cross linking agent (it may only be hereafter called a "cross linking agent") which constructs a bridge with an acid. The following can be mentioned as said cross linking agent.

(i) A thing, a phenol derivative, etc. of a publication can be mentioned [Japanese Patent Application No. / No. 53788 / ten to] to the compound (iii) epoxy compound pan which has the aromatic compound (ii) N-hydroxymethyl group, N-alkoxy methyl group, or N-acyloxy methyl group permuted by the alkoxy methyl group or the hydroxymethyl group.

[0102] As an addition of said cross linking agent, 5 - 80 % of the weight is desirable to the total-solids weight of an image formation layer, 10 - 75 % of the weight is more desirable, and 20 - 70 % of the weight is the most desirable. When using said phenol derivative as a cross linking agent, as an addition of this phenol derivative, 5 - 70 % of the weight is desirable to the total-solids weight of an image formation ingredient, and 10 - 50 % of the weight is more desirable. The detail of the various above-mentioned compounds is indicated by Japanese Patent Application No. No. 66733 [11 to].

[0103] - In the suitable image formation layer of the original edition for lithography to apply the alkali development liquid of other component-this inventions, further various additives can be added if needed. For example, other cyclic anhydrides, phenols, organic acids, and sulfonyl compounds can also be used together in order to raise sensibility.

[0104] As said cyclic anhydride, the tetrahydro phthalic anhydride, hexahydro phthalic anhydride, 3, and 6- and oxy--delta4-tetra-hydra phthalic anhydride of a publication, alpha-phenyl maleic anhydride, a succinic anhydride, pyromellitic dianhydride, etc. are mentioned in a U.S. Pat. No. 4,115,128 specification. said -- phenols -- ***** -- bisphenol A -- p - a nitrophenol -- p - ethoxy -- a phenol -- two -- four -- four -- ' - trihydroxy -- a benzophenone -- two -- three -- four - TORIBIDOROKISHI -- a benzophenone -- four - hydroxy one -- a benzophenone -- four -- four -- ' -- four -- " - TORIBIDOROKISHI -- a triphenylmethane color -- four -- four -- ' -- three -- " -- four -- " - tetra--- hydroxy one - 3, 5, 3', 5', - tetramethyl triphenylmethane color, etc. are mentioned.

[0105] As said organic acids, to JP,60-88942,A, JP,2-96755,A, etc., a publication, Sulfonic acids, sulfinic acids, alkyl sulfuric acid, phosphonic acid, phosphoric ester, and carboxylic acids are mentioned. Specifically P-toluenesulfonic acid, dodecylbenzenesulfonic acid, P-** RUEN sulfinic acid, Ethyl sulfuric acid, phenylphosphonic acid, phenyl phosphinic acid, phosphoric-acid phenyl, Phosphoric-acid diphenyl, a benzoic acid, isophthalic acid, an adipic acid, para toluylic acid, 3, 4-dimethoxy benzoic acid, a phthalic acid, a terephthalic acid, the 4-cyclohexene -1, 2-dicarboxylic acid, an erucic acid, a lauric acid, an n undecane acid, an ascorbic acid, etc. are mentioned. As said sulfonyl compounds, a bis-hydroxyphenyl sulfone, a methylphenyl sulfone, diphenyl disulfon, and ** are mentioned, for example.

[0106] As an addition of a cyclic anhydride besides the above, phenols, organic acids, or sulfonyl compounds, 0.05 - 20 % of the weight is desirable to the total-solids weight of an image formation layer, 0.1 - 15 % of the weight is more desirable, and 0.1 - 10 % of the weight is the most desirable.

[0107] Moreover, the amphoteric surface active agent of a publication can be added for the purpose which extends the stability of the processability to development conditions to a nonionic surface active agent given in JP,62-251740,A, JP,3-208514,A, etc., JP,59-121044,A, JP,4-13149,A, etc. As said nonionic surface active agent, sorbitan tristearate, sorbitan monopalmitate, a sorbitan trio rate, a stearin acid monoglyceride, the polyoxyethylene nonylphenyl ether, etc. are mentioned, for example. As said amphoteric surface active agent, alkyl di(aminoethyl)glycine, alkylpolyamino ethylglycine hydrochloride, 2-alkyl-N-carboxy ethyl-N-hydroxyethyl-imidazolinium-betaine, N-tetradecyl-N, and N-betaine mold (for example, a trade name: Amogen K, product made from the 1st Industry) etc. is

mentioned, for example. As amount of said nonionic surface active agent or the amphoteric surface active agent used, 0.05 - 15 % of the weight is desirable to the total-solids weight of an image formation layer, and 0.1 % of the weight is more desirable.

[0108] The color and pigment as the baked appearance electuary and the image coloring agent for obtaining a visible image immediately can be added to said image formation layer after heating by exposure. As said baked appearance electuary, the combination of the compound which generates an acid with heating by exposure, and the organic dye which can form a salt is mentioned, for example. Specifically, combination ** of the trihalomethyl compound and salt plasticity organic dye of a publication is mentioned to each official report of the combination of o-naphthoquinone JIADO-4-sulfonic-acid halo GENIDO and salt plasticity organic dye given in each official report of JP,50-36209,A and JP,53-8128,A, JP,53-36223,A, JP,54-74728,A, JP,60-3626,A, JP,61-143748,A, JP,61-151644,A, and JP,63-58440,A. as said trihalomethyl compound, there are an oxazole system compound and triazine compound, and it passes through all, excels in the Tokiyasu quality, and clear -- appearance is burned and carried out and an image is given. As said image coloring agent, for example in addition to said salt plasticity organic dye, other colors can be used, for example, an oil color and basic dye are mentioned suitably.

[0109] Specifically Oil yellow #101, oil yellow #103, oil pink #312, the oil green BG Oil blue BOS, oil blue #603, oil black BY, Oil black BS, oil black T-505 (above, product made from ORIENT Chemical industry), Victoria pure blue, a crystal violet (C. I.42555), Methyl Violet (C. I.42535), ethyl biotechnology red, Rhodamine B (C. I.145170B), Malachite Green (C. I.42000), a methylene blue (C. I.52015), etc. can be mentioned. Moreover, especially a color given in JP,62-293247,A is desirable.

[0110] As an addition of said various colors, 0.01 - 10 % of the weight is desirable to the total-solids weight of an image formation layer, and 0.1 - 3 % of the weight is more desirable.

[0111] Moreover, if needed, a plasticizer can also be added in order to give flexibility etc. to the paint film. As said plasticizer, oligomer, a polymer, etc. of butyl phthalyl, a polyethylene glycol, tributyl citrate, phthalic-acid JIEJIRU, dibutyl phthalate, phthalic-acid dihexyl, a dioctyl phthalate, tricresyl phosphate, tributyl phosphate, trioctyl phosphate, tetrahydrofurfuryl oleate, an acrylic acid, or a methacrylic acid are mentioned, for example.

[0112] furthermore, the need -- responding -- the following -- an additive can be added variously. For example, the compound to which the solubility of an alkali water-soluble high molecular compound is substantially reduced in the state of un-decomposing can be used together by pyrolysis nature, such as an onium salt, o-quinone diazide compound, an aromatic series sulfone compound, and an aromatic series sulfonate compound. Addition of this compound is desirable at the point of aiming at improvement in the dissolution stopping power to the phenomenon liquid of the image section.

[0113] As said onium salt, diazonium salt, ammonium salt, phosphonium salt, iodonium salt, sulfonium salt, a seleno NIUMU salt, arsonium salt, etc. are mentioned, for example. Especially, for example S.I.Schlesinger, Photogr.Sci.Eng., 18,387 (1974), T. S.Bal et al, Polymer21,423 (1980), Diazonium salt given in JP,5-158230,A, U.S. Pat. No. 4,069,055, Ammonium salt given in said 4,069,056 numbers and JP,3-140140,A, D.C.Necker et al, Macromolecules, 2468 (1984), C. S.Wen et al, Teh, Proc.Conf.Rad.CuringASIA, p478 Tokyo, Oct (1988), Phosphonium salt given in U.S. Pat. No. 4,069,055 and said 4,069,056 numbers, J. V.Crivello et al.Macromolecules, 10 (6), 1307 (1977).Chem.&Eng.News, Nov.28, p.31 (1988), Iodonium salt given in the Europe patent No. 104,143, U.S. Pat. No. 339,049, 410,201, JP,2-150848,A, and JP,2-296514,A, [0114] J. V.Crivello et al and Polymer J. -- 17 and 73 (1985) -- J. V.Crivello et al 43 al.J.Org.Chem., 3055 (1978), W. R.Watt et al, J.Polymer Sci., Polymer 22 Chem.Ed., 1789 (1984), J. V.Crivello et al, Polymer Bull., 14,279 (1985), J. V.Crivello et al, Macromolecules14 (5), 1141 (1981) J.V.Crivello et al, J.Polymer Sci., Polymer Chem.Ed., 17,2877 (1979), The Europe patent No. 370,693, said 233,567 numbers, said 297,443 numbers, Said 297,442 numbers, U.S. Pat. No. 4,933,377, said 3,902,114 numbers, said -- No. 410,201 - - said -- No. 399,049 -- said -- No. 4,760,013 -- said -- No. 4,734,444 -- said -- No. 2,833,827 and the German country patent No. 2,904,626 -- said -- No. 3,604,580 -- said -- the sulfonium salt of a publication of No. 3,604,581, and [0115] J. V.Crivello et al, Macromolecules, 10 (6), 1307 (1977),

J.V.Crivello et al, J.Polymer Sci., Polymer Chem.Ed., a seleno NIUMU salt given in 17 and 1047 (1979), C. S. Wen et al, Teh, Proc.Conf.Rad.Curing ASIA, p478 The arsonium salt of a publication etc. is mentioned to Tokyo and Oct (1988).

[0116] Diazonium salt is desirable among the above and the thing of a publication is more desirable to JP,5-158230,A especially.

[0117] As a counter ion of an onium salt, 4 boric-acid fluoride, a 6 phosphorus-fluoride acid, A triisopropyl naphthalene sulfonic acid, 5-nitro-o-toluenesulfonic acid, 5-sulfosalicylic acid, 2, 5-dimethyl BENSEN sulfonic acid, 2 and 4, 6-trimethyl benzenesulfonic acid, 2-nitrobenzene sulfonic acid, 3-chlorobenzene sulfonic acid, 3-BUROMOHENZEN sulfonic acid, 2-fluoro capryl lactam naphthalene sulfonic acid, dodecylbenzenesulfonic acid, a 1-naphthol-5-sulfonic acid, a 2-methoxy-4-hydroxy-5-benzoyl-Ben Seng sulfonic acid, Para toluenesulfonic acid, etc. can be mentioned. Especially, alkyl aromatic series sulfonic acids, such as 6 phosphorus-fluoride acid, triisopropyl naphthalene sulfonic-acid, 2, and 5-dimethylbenzene sulfonic acid, are desirable.

[0118] As said o-quinone diazide compound, it is the compound which has at least one o-quinone diazide radical, and what increases alkali fusibility by the pyrolysis is mentioned, and the compound of various structures can be used. Said o-quinone diazide helps the solubility of the original edition for lithography according to both the effectiveness that lose the dissolution control ability of a binder and o-quinone diazide itself changes with pyrolyses to the matter of alkali fusibility.

[0119] as the above o-quinone diazide compounds -- for example, J. Koser work "light-sensitive systems" (John Wiley&Sons.Inc.) -- although the compound of a publication is [page / 339-352nd] usable, various aromatic series polyhydroxy compounds or the aromatic series amino compound, the sulfonate of o-quinone diazide made to react, or a sulfonic-acid amide is desirable especially. Moreover, benzoquinone (1 2)-diazido sulfonic-acid chloride or a naphthoquinone given in JP,43-28403,B -(1 2)-Benzoquinone given in the ester of diazido-5-sulfonic-acid chloride and pyrogallol-acetone resin, U.S. Pat. No. 3,046,120, and 3,188,210 -(1 2)- Diazido sulfonic-acid chloride or naphthoquinone -(1 2)- The ester of diazido-5-sulfonic-acid chloride and phenol formaldehyde resin is also desirable.

[0120] Furthermore, naphthoquinone -(1 2)- Ester with diazido-4-sulfonic-acid chloride, phenol formaldehyde resin, or cresol formaldehyde resin, naphthoquinone -(1 2)- The ester of diazido-4-sulfonic-acid chloride and pyrogallol-acetone resin is also desirable. In addition, for example, JP,47-5303,A, JP,48-63802,A, JP,48-63803,A, JP,48-96575,A, JP,49-38701,A, JP,48-13354,A, JP,41-11222,B, JP,45-9610,B, JP,49-17481,B, U.S. Pat. No. 2,797,213, 3,454,400, 3,544,323, 3,573,917, 3,674,495, A thing given in 3,785,825, the British patent No. 1,227,602, 1,251,345, 1,267,005, 1,329,888, 1,330,932, the German patent No. 854,890, etc. is also useful. These compounds may be used as mixture combining several sorts, even if independent.

[0121] As additions, such as said onium salt, o-quinone diazide compound, and an aromatic series sulfonate, 0.1 - 50 % of the weight is desirable to the total-solids weight of an image formation layer, 0.5 - 30 % of the weight is more desirable, and 0.5 - 20 % of the weight is the most desirable.

[0122] - As a base material for preparing a base material-image formation layer, a pure aluminium plate, an aluminium alloy plate, the plastic film with which aluminum was laminated or vapor-deposited are mentioned, for example. As for the front face of an aluminum plate, it is desirable that surface treatment, such as osmosis processing to water solutions, such as graining processing, sodium silicate, a fluoride zirconic acid potassium, and phosphate, or anodizing, is performed. Moreover, after carrying out anodizing of the aluminum plate of a publication to the aluminum plate and JP,47-5125,B which carried out immersion processing in the sodium-silicate water solution after the publication grained in U.S. Pat. No. 2,714,066 detail, the aluminum plate which carried out immersion processing in the water solution of an alkali-metal silicate is also desirable.

[0123] As said anodizing, it is given [pass / in the electrolytic solution which combined two or more sorts / by making an aluminum plate into an anode plate / independent or / of the water solution of organic acids, such as inorganic acids, such as a phosphoric acid, a chromic acid, a nitric acid, and a boric acid, or oxalic acid, and sulfamic acid, or these salts, or a nonaqueous solution / a current], for example. Moreover, silicate electrodeposition of a publication is also effective in a U.S. Pat. No.

3,658,662 specification.

[0124] Moreover, what performed said anodizing to the base material which gave the electrolysis grain of a publication to a U.S. Pat. No. 4,087,341 specification, JP,46-27481,B, and JP,52-30503,A is useful. After a publication grains on U.S. Pat. No. 3,834,998 specifications, the aluminum plate which etched chemically and carried out anodizing further is also useful.

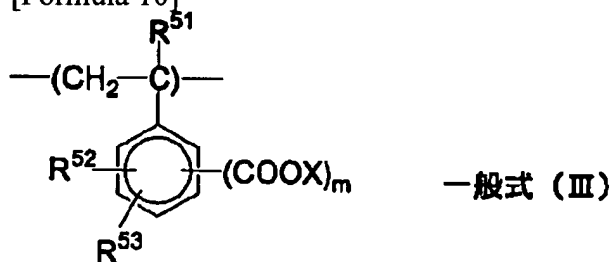
[0125] These processings are performed in order to make the front face of a base material into a hydrophilic property, and also they are performed for the various purpose, such as the purpose which prevents a harmful reaction with the image formation layer prepared on a base material, and the purpose which raises adhesion with an image formation layer.

[0126] Although the original edition for lithography is producible by applying an image formation layer on a desired base material as a sensitization layer, it can also prepare an under coat on a base material before formation of said image formation layer if needed. Various organic compounds are mentioned as a component used for an under coat. For example, a carboxymethyl cellulose, a dextrin, gum arabic, The phosphonic acid which has amino groups, such as 2-aminoethylphosphonic acid; The phenylphosphonic acid which may have a substituent, Organic phosphonic acid, such as naphthyl phosphonic acid, alkyl phosphonic acid, glycerophosphonic acid, methylene diphosphonic acid, and ethylene diphosphonic acid; The phenyl phosphoric acid which may have a substituent, Organic phosphorus acids, such as a naphthyl phosphoric acid, an alkyl phosphoric acid, and glycerophosphoric acid; The phenyl phosphinic acid which may have a substituent, Amino acid, such as organic phosphinic acid; glycines, such as naphthyl phosphinic acid, an alkylphosphine acid, and glycerophosphinic acid, and beta-alanine; the hydrochloride of the amine which has hydroxyls, such as a hydrochloride of triethanolamine, etc. is mentioned. Said organic compound may be used by the one-sort independent, and two or more sorts may be mixed and used. Moreover, it is also a desirable mode to carry out the under coat of the diazonium salt mentioned above.

[0127] Moreover, the organic under coat containing at least one sort of an organic high molecular compound which has the configuration unit expressed with the following general formula (III) as an under coat is also desirable.

[0128]

[Formula 10]



[0129] R51 expresses a hydrogen atom, a halogen atom, or an alkyl group among a formula, and R52 and R53 express a hydrogen atom, a hydroxyl group, a halogen atom, an alkyl group, a permutation alkyl group, an aryl group, a permutation aryl group, -OR54, -COOR55, -CONHR56, -COR57, or -CN independently, respectively, and it may join together mutually and said R52 and R53 may form a ring structure. Here, R54-R57 express an alkyl group or an aryl group independently, respectively. X expresses a hydrogen atom, a metal atom, and -NR 58R59R60R61. Here, said R58-R61 express a hydrogen atom, an alkyl group, a permutation alkyl group, an aryl group, or a permutation aryl group independently, respectively, and it may join together mutually and R58 and R59 may form a ring structure. m expresses the integer of 1-3.

[0130] As desiccation coverage of said under coat, 2 - 200 mg/m² is desirable, and 5 - 100 mg/m² is more desirable. Membranous [sufficient] may not be acquired if said desiccation coverage is less than two 2 mg/m. On the other hand, even if it applies exceeding 200 mg/m², effectiveness beyond it cannot be acquired.

[0131] Said under coat can be prepared by the following approach. Namely, the solution for under coats

made to dissolve said organic compound in organic solvents or those partially aromatic solvents, such as water or a methanol, ethanol, and a methyl ethyl ketone, is applied on base materials, such as an aluminum plate. In the solution for under coats which dried and was made to dissolve said organic compound in organic solvents or those partially aromatic solvents, such as the approach of establishing, water or a methanol, ethanol, and a methyl ethyl ketone the approach of base materials, such as an aluminum plate, being immersed, making said organic compound adsorb, and washing, drying and establishing with water etc. after that -- it comes out.

[0132] In the former, it is desirable to use the solution for under coats of 0.005 - 10-% of the weight concentration of said organic compound. On the other hand, in the latter, as concentration of said organic compound of the solution for under coats, 0.01 - 20 % of the weight is desirable, and 0.05 - 5 % of the weight is more desirable. Moreover, as immersion temperature, 20-90 degrees C is desirable, and 25-50 degrees C is more desirable. As immersion time amount, 0.1 - 20 minutes is desirable and 2 seconds - 1 minute is more desirable.

[0133] Said solution for under coats can also be adjusted to the range of pH 1-12 using acid, such as alkalis, such as ammonia, triethylamine, and a potassium hydroxide, and a hydrochloric acid, a phosphoric acid. Moreover, a yellow color can also be added for the purpose of tone reproduction nature amelioration.

[0134] Generally, the original edition for lithography developed with the alkali development liquid of this invention dissolves various above-mentioned components (said component (A) - (F) and other components) in a solvent, uses them as the coating liquid for image formation layers, and this is applied on a desired base material and it produces it. As said solvent, for example Ethylene dichloride, a cyclohexanone, A methyl ECHIRE ketone, a methanol, ethanol, propanol, ethylene glycol monomethyl ether, 1-methoxy-2-propanol, 2-methoxy ECHIIRU acetate, 1-methoxy-2-propyl acetate, dimethoxyethane, methyl lactate, Although ethyl lactate, N,N-dimethylacetamide, N,N-dimethylformamide, a tetramethyl glare, N-methyl pyrrolidone, dimethyl sulfoxide, a sulfolane, alpha-butyrolactone, toluene, etc. are mentioned In this invention, it is not limited to these. Moreover, said solvent may be independent or may mix two or more sorts.

[0135] As total-solids concentration of the various components in said solvent (said component (A) - (F) and other components), 1 - 50 % of the weight is desirable. Moreover, generally as desiccation coverage (solid content) of the image formation layer prepared by applying and drying on a base material, 0.5 - 5.0 g/m² is desirable.

[0136] Although it can choose suitably from well-known various approaches as an approach of applying on a base material, bar coating-machine spreading, rotation spreading, a spray coating cloth, curtain spreading, DIP spreading, the Ayr knife spreading, grade spreading, roll coating, etc. can be mentioned, for example. Although apparent sensibility becomes size as coverage decreases, the coat property of an image formation layer falls.

[0137] It is ***** to add a surfactant, for example, a fluorochemical surfactant given in JP,62-170950,A etc., in said coating liquid for image formation layers for the purpose which improves spreading nature. As said addition, 0.01 - 1 % of the weight is desirable to the total-solids weight of an image formation layer, and 0.05 - 0.5 % of the weight is more desirable.

[0138] The original edition for lithography of this invention is recordable with infrared laser, and also the thermal record by record by the ultraviolet ray lamp, a thermal head, etc. is possible for it. As said infrared laser, the laser which emits infrared radiation with a wavelength of 700-1200nm is desirable, and the solid state laser or semiconductor laser which emits the infrared radiation of this wavelength range is more desirable.

[0139]

[Example] Hereafter, although an example explains this invention to a detail, this invention is not restricted to these. In addition, all "%" in an example expresses "% of the weight."

[0140] After washing the aluminum plate (quality of the material 1050) of <production of the original edition for lithography> 0.3mm thickness by the trichloroethylene and degreasing, using a nylon brush and the PAMISU-water suspension of 400 meshes, this front face was grained and it often washed with

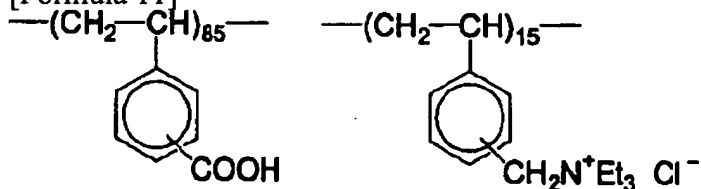
water. After washing, after etching by having been immersed in the sodium-hydroxide water solution for 9 seconds 25 45-degree C% and rinsing this aluminum plate, it was immersed in the nitric-acid water solution for 20 seconds 20 more%, and rinsed again. The amounts of etching on the front face of graining at this time were about 3 g/m².

[0141] Next, it rinsed and dried, after preparing the anodized coating of 3 g/m² by the direct current of current density 15 A/dm², having used the sulfuric acid as the electrolytic solution for this aluminum plate 7%. This was processed for 10 seconds in 30-degree C 2.5% water solution of sodium silicates, the coating liquid for the following under coats was applied, it dried for 15 seconds under 80 degrees C, and the base material was obtained. The desiccation coverage of the under coat after desiccation was 15mg/m².

[0142]

<Coating liquid for under coats> The - following copolymer P (molecular weight 28000) ... 0.3g - methanol ... 100g - water ... 1g [0143]

[Formula 11]



共重合体 P

[0144] On the obtained base material, the coating liquid for the following image formation layers was applied so that desiccation coverage might serve as 1.8 g/m², and the original edition for lithography of a positive type was obtained.

[0145]

<Coating liquid for image formation layers> -m, p-cresol novolak [(B) Component] ... 1.0g (m/p ratio = 6/4, weight average molecular weight 8000, and unreacted cresol are contained 0.5%)

- Cyanine-dye A [(A+C) a component] ... 0.1g - phthalic anhydride [(D) Component] ... 0.05g - p-toluenesulfonic acid ... 0.002g - ethyl violet ... 0.02g (Counter ion: 6-hydroxy-beta-naphthalene sulfonic acid) - A naphthoquinone 1 and 2-diazido-5-sulfonyl chloride Esterification object with pyrogallol-acetone resin ... 0.01g - fluorochemical surfactant ... 0.05g (trade name: the megger fuck F-177, Dainippon Ink & Chemicals, Inc. make)

- Methyl ethyl ketone ... 8g - 1-methoxy-2-propanol ... 4g [0146] (Examples 1-8 and examples 1-3 of a comparison)

<Production of alkali development liquid of SiO₂ content> silicon oxide SiO₂, and alkali oxide M₂O (M=K) Mixed mole-ratio SiO₂/K₂O of Na and Li to 4.0% water-solution 1 of potassium silicates L of 1.1 The additive shown in the following table 1 equivalent to the amount of 1% of alkali development **** weight was added, it adjusted so that potassium content might turn into content of a publication further in Table 1, and alkali development liquid (1) - (8) and alkali development liquid (9) - (11) of this invention was produced.

[0147] Semiconductor laser with the output of 500mW, a wavelength [of 830nm], and a beam diameter of 17 micrometers (1 / e²) was used for the original edition for lithography obtained from the above, and it exposed by 5m/second in horizontal-scanning rate, and held at 25 degrees C. Every one sheet of this original edition for lithography was taken out after 1 minute, 3 minutes, and 5 minutes by immersing three sheets at a time in each of said alkali development liquid (1) - (11), and carrying out a development to it as the following table 1, it was washed in cold water respectively, and the lithography plate was obtained.

[0148] As it was the <evaluation of development stability> above, "the residual membrane of the non-image section" of each lithography version which developed for 1 minute, 3 minutes, and 5 minutes, and was obtained, and "**** of the image section" were observed by viewing in accordance with the

following criteria, and organic-functions evaluation was performed. The evaluated result is shown in the following table 2.

(Criteria)

- Residual membrane of the non-image section - O: The residual membrane of an image formation layer was not accepted.

** : The residual membrane of an image formation layer was accepted a little.

x: Poor development was accepted and the image formation layer remained clearly.

- **** of the image section - O: **** was not accepted in the image section.

** : **** was the level whose private seal ** are satisfactory practically a little at the image section.

x: The image defect by **** was produced in the image section.

[0149] (Examples 9-16 and examples 4-6 of a comparison)

Combined <production of alkali development liquid of nonreducing-sugar content> nonreducing sugar, and a base. To 5.0% water-solution 1 of D-sorbitol potassium salt L which consists of D-sorbitol / alkali oxide M₂O (M=K, Na, Li) The additive shown in the following table 1 equivalent to the amount of 1% of alkali development **** weight was added, it adjusted so that potassium content might turn into content of a publication further in Table 1, and alkali development liquid (12) - (19) and alkali development liquid (20) - (22) of this invention was produced.

[0150] It replaced with the alkali development liquid used in examples 1-8 and the examples 1-3 of a comparison, and the lithography plate was obtained like examples 1-8 and the examples 1-3 of a comparison except having used alkali development liquid (12) - (19) and alkali development liquid (20) - (22) of this invention as the following table 1. Moreover, it observed by evaluating the obtained lithography version like example 1 grade. The result is shown in the following table 2.

[0151]

[Table 1]

	SiO ₂ 含有 アルカリ現像 処理液 No.		非還元糖含有 アルカリ現像 処理液 No.	添加物	アルカリ成分中の K ⁺ 含有率
実施例1	(1)	実施例9	(12)	ホリエチレングリコール1000 (EO=22)	100%
実施例2	(2)	実施例10	(13)	ホリエチレングリコール1000 (EO=22)	75%(Na:25%)
実施例3	(3)	実施例11	(14)	ホリエチレングリコール1000 (EO=22)	50%(Na:50%)
実施例4	(4)	実施例12	(15)	トリエタノールアミン EO付加物(EO=20)	100%
実施例5	(5)	実施例13	(16)	トリメチロールプロピルエーテル EO付加物(EO=20)	100%
実施例6	(6)	実施例14	(17)	エチレンジアミン EO付加物(EO=20)	100%
実施例7	(7)	実施例15	(18)	ジグリセリルエーテル EO付加物(EO=20)	100%
実施例8	(8)	実施例16	(19)	ソルビトール EO付加物(EO=20)	100%
比較例1	(9)	比較例4	(20)	ホリエチレングリコール1000 (EO=22)	25%(Na:75%)
比較例2	(10)	比較例5	(21)	なし	100%
比較例3	(11)	比較例6	(22)	なし	25%(Na:75%)

[0152]

[Table 2]

	アルカリ 現像処理液	非画像部の残膜評価			画像部の欠膜評価		
		1分間	3分間	5分間	1分間	3分間	5分間
実施例1、9	(1)、(12)	○	○	○	○	○	○
実施例2、10	(2)、(13)	○	○	○	○	○	○
実施例3、11	(3)、(14)	○	○	○	○	○	○
実施例4、12	(4)、(15)	○	○	○	○	○	○
実施例5、13	(5)、(16)	○	○	○	○	○	○
実施例6、14	(6)、(17)	○	○	○	○	○	○
実施例7、15	(7)、(18)	○	○	○	○	○	○
実施例8、16	(8)、(19)	○	○	○	○	○	○
比較例1	(9)	×	△	○	△	×	×
比較例2	(10)	△	○	○	△	×	×
比較例3	(11)	×	△	○	×	×	×
比較例4	(20)	×	△	○	△	×	×
比較例5	(21)	△	○	○	△	×	×
比較例6	(22)	×	△	○	×	×	×

[0153] An ethyleneoxide addition product is contained so that more clearly than Table 2. Furthermore in alkali development liquid (1) - (8) and (12) - of this invention (19) made into 50 - 100%, the potassium ion content (mole ratio) to the alkali-metal cation in an alkali developer, and the total content of ammonium ion also in which developer system of SiO₂ content and nonreducing-sugar content, the image section does not have an image defect by ****, and survival of an image formation layer is also accepted also in the non-image section -- not having -- high -- the sharp and clear image was able to be formed. In alkali development liquid (9) - (11) and (20) - which contained the ethyleneoxide addition product and, on the other hand, did not make potassium ion content to the cation total content 50 - 100% (22), the image formation layer remained, without dissolving in the non-image section completely, and the image defect by **** was produced in the image section, and a stable development was not able to be performed.

[0154]

[Effect of the Invention] without it gives a defect to the image section according to this invention -- high -- the alkali development liquid for the lithography versions which can form a sharp and clear image can be offered. without it invites an image defect to the image section according to the platemaking approach of the lithography version of this invention, maintaining development nature -- an edge tone -- high -- it becomes possible to offer a sharp and clear image. the minute image which contains the dot section, a thin line, etc. especially -- more -- quantity -- it is sharply reproducible.

[Translation done.]

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

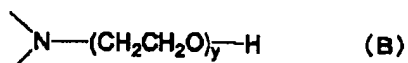
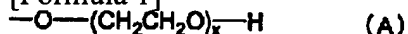
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] Alkali development liquid for the lithography versions with which the ethyleneoxide addition product which has at least one radical expressed with the following type (A) or (B) is contained, and potassium ion content (mole ratio) to the alkali-metal cation in alkali development liquid and the total content of ammonium ion is characterized by being 50 - 100%.

[Formula 1]



x and y express one or more integers among [type.]

[Claim 2] The platemaking approach of the lithography version characterized by developing negatives with the alkali development liquid for the lithography versions according to claim 1 after exposing the original edition for lithography which has an image formation layer containing an infrared absorption agent in the image by infrared exposure.

[Translation done.]